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# PHSB STUDIES

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## AN UNNECESSARY DEATH INDEX

There exists great variation among county death rates in North Carolina. The disparity between the highest and lowest death rates can be observed in Tables 1 and 2 which show striking differences by age and cause of death. If it can be assumed that innate disease proneness of people in different counties is basically the same, then conditions existing in counties with the lower rates are the more favorable conditions for health. The number of deaths that occur under these conditions could be considered expected, and the number of deaths that exceed this expected amount could be considered unnecessary.

A study done in 1967 by the National Center for Health Statistics estimated unnecessary deaths among the states (1). In order to examine unnecessary deaths in North Carolina, the basic model used by NCHS was modified and applied to each of the 100 counties in the state, utilizing more current and more detailed data. For the purpose of this study, "unnecessary deaths" have been defined as those deaths which are in excess of the number of deaths which would have occurred had the average of the fifteen lowest county death rates prevailed.

Deaths to residents of each of the counties were separated into 96 different groups or cells: 8 age groups, 2 race groups, 6 cause of death groups (the 5 leading causes and an "all other" category). Five years (1971-1975) of deaths were used to help insure sufficient numbers and therefore more reliable data. Death rates per 100,000 population were calculated for each cell.

In determining the average of the fifteen lowest rates for each of the 96 cells, all 100 counties were not used since some counties had too few residents in a given race group to insure reliable data. To be included in the determination of the best 15 rates for each cell, a county had to have an average annual population of at least 3,000 in each race group. Thus, 99 counties were used to determine the best rates for whites and 71 counties were used to determine the best rates for non-whites.

Table 3 shows the average of the 15 lowest death rates for each of the 96 cells. It can be seen that some of the cells have zero rates. In such cases, the 15 counties all had no deaths in those categories.

To determine expected deaths for a county, the rates of Table 3 were applied to the corresponding population of the county. These are the numbers of deaths that would have occurred under the "most favorable" conditions. The differences between these deaths and the deaths that actually occurred may be considered excess or unnecessary deaths. The summation of these deaths yields the number of unnecessary deaths that a county had in a particular cause group, age group, race group, or in the county as a whole.

An unnecessary death index (UDI), where the unnecessary deaths are expressed as a percentage of the actual deaths, is needed to compare counties. A county's UDI is the percent of its deaths which would not have occurred had it experienced the average death rate of the best 15 counties. A UDI may also be calculated for each of the cause, age and race groups.

Table 4 shows North Carolina's UDI's for causes, ages, and overall mortality. Each is quite close to the mean UDI of the 100 counties. High UDI's are observed for the two accident groups and the three age groups in the 5 to 35 year range.